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LONG-RUN PERFORMANCE OF FINNISH INITIAL PUBLIC OFFERINGS

A Quantitative study of listings on the OMXH Main List from 2005 to 2016

Niklas Lindemann

International Business
Bachelor's Thesis
Supervisor: Heikki Rannikko
Date of approval: 9 April 2020

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ABSTRACT OF
BACHELOR'S THESIS

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Objectives
The main objectives of this study were to study the performance of Finnish IPOs in the aftermarket both in the long-run (three years) during the first day of trading. The secondary object was to compare returns of small cap companies and large cap companies to find differences.

Summary
The study analyzed the accuracy of the underpricing theory in the context of Finnish IPOs as well as the globally researched phenomena of long-run underperformance amongst IPOs. After calculating the raw- and abnormal returns for the 13 sample companies, comparisons were made between smaller and larger valued companies. The data for the IPOs was collected through Thomson Reuters Datastream and the index data (OMXHPI) was collected through Thomson Reuters Eikon.

Conclusions
The main conclusion of this study is that during the period of 2005 to 2016 IPOs underperformed slightly in the long-run when compared to the market index. Higher valuated companies performed better when compared to smaller companies. The second conclusion is that contrary to prior research the sample companies were not significantly underpriced.

Key words: IPO, underpricing, IPO underperformance, investment, initial public offering
Language: English

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1. Introduction

Initial Public Offerings (IPOs) are defined by the Mirriam-Webster Dictionary as “an initial offering of a company’s stock” (2020). IPOs are a well-researched category of investments and multiple studies have noted a tendency for long-run underperformance during the first years after the listing. The most scrutinized market in the world regarding IPO performance is the USA (e.g. Ibbotson, 1975; Ritter, 1991; Ritter & Welch, 2002; Gompers & Lerner, 2003), however, many studies are focused on other markets, such as Europe or Asia (e.g. Keloharju, 1993; Bergström et al., 2006; Hoque, H., 2014). A market which has been largely ignored due to its smaller size is the Finnish market. By conducting a quantitative analysis of the market investors gain insight into the price performance of Finnish IPOs when compared to the market in general. This helps investors make more informed decisions. The understanding of underpricing also helps companies planning on going public decide on their initial offering price, as underpricing essentially means “leaving money on the table”.

1.1. Background

Multiple studies have found evidence of performance anomalies both during the “initial” period and in the long-run. Stock performance is defined as the price change of a stock versus a chosen benchmark or index during the same period. The initial period is the period between the setting of the initial offering price and the closing price after the first day trading in a stock exchange. The long-run is in most studies defined as anything between 24 months to 5 years after issuance. This paper will provide information of price performance on a sample of listings between 2005 and 2016 on the OMXH Main List. The focus is on the initial stage and the underpricing of offerings, as well as on the long-run performance which for this paper is defined as three years.

1.2. Research Problem

The main research problem for this thesis is the long-run performance of Finnish IPOs. The secondary problem is the underpricing theory and how it affects the first day returns of IPOs on the OMXH main list.

1.3. Research Questions and Objectives

This thesis poses three research questions:

I. Do Finnish IPOs on average underperform the market index of the Helsinki Stock Exchange at their three-year maturity?
II. To what extent are issues underpriced?
III. Do companies with a higher market valuation at the initial offering fare better during the three years following the listing?

To explore the performance of Finnish IPOs between 2005 and 2016 I will be conducting the following things. Firstly, I will review previous studies on IPO performance and underpricing on the Finnish market and international markets such as the US and Germany, as well as identify knowledge gaps and formulate research questions related to these knowledge gaps. Second, I will collect data about the stock prices of new issues on the OMXH Main List as well as the index data for the period of 2005 to 2016 and analyze the collected data to find answers to research questions. Third, I will report the findings and discuss their relevance for the literature and draw conclusions. Finally, I will present limitations for my research and point out possible further research avenues.

2. *Literature review*

It is necessary to review past studies regarding Initial Public Offerings (IPO) and their underperformance to conduct a more efficient analysis about the current situation in Finland. By identifying similarities and differences in the results of studies made on the subject in the past it should come clear whether or not these findings can be used for comparison with the results of studies conducted in Finland. The main areas of interest are the long-run underperformance of IPOs, the theory of underpricing and the overall performance of IPOs. Within financial theory this study focuses on the market efficiency side rather than on behavioral factors. Therefore, the efficient market hypothesis will be discussed in addition to information asymmetry as factors causing underpricing and long-run underperformance. Previous literature should aid in formulating the methodology of research conducted for this paper regarding how benchmarks should be chosen and what indexes should be utilized for comparison. The IPO process is presented in Figure 1, which shows a general timeline about how the process flows from start to finish.

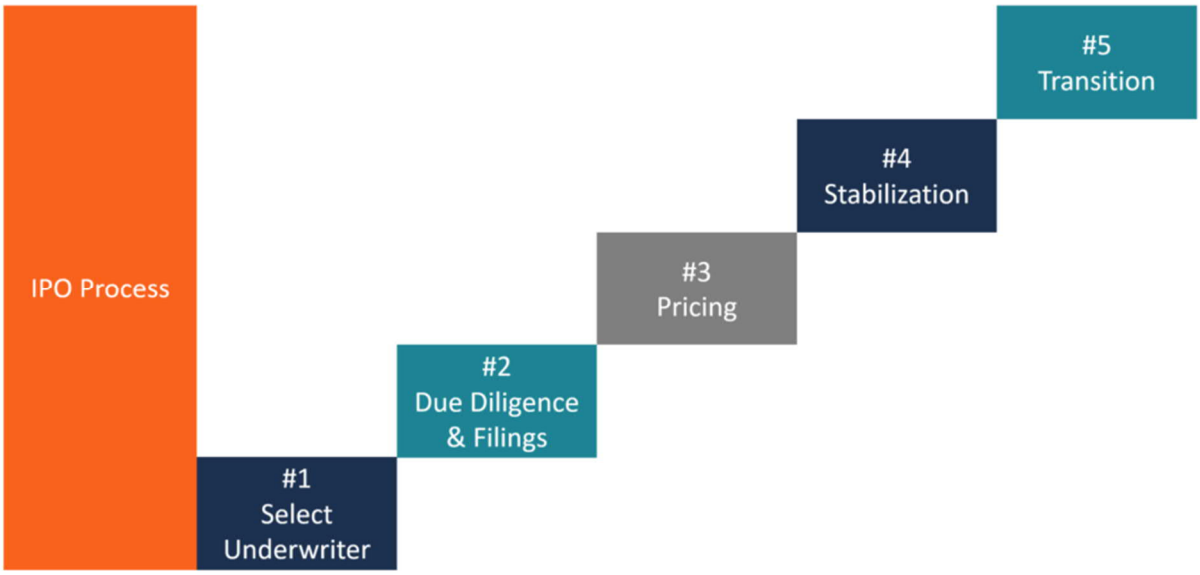

Figure 1: The IPO Process (Corporate Finance Institute, 2015)

2.1. Why do firms go public?

The main driver behind an IPO is to solve the financing problem for a company. When contemplating the varying forms of financing for a company, there are two main compartments under which most financing options belong: equity financing and debt financing. Debt financing usually means loans from banks, other financial institutions, or from varying angel investors. Companies relying on debt are generally private. If a company relies on equity financing, the company is usually public. By expanding their ownership base a company seeks to raise capital. The first time a company offers shares for investors to buy is called the Initial Public Offering (IPO) and it is generally connected to the company's intention of listing on a stock exchange. Initial public offerings offer an option for an investor to buy shares in a company prior to the listing and the prestige which is connected to stock exchanged public companies.

While there have been multiple studies on the performance of IPOs, little is understood about the more exact reasons behind going public. While there are speculations on the subject, a study conducted by Pagano et al. (1998) is one of the few testing different IPO theories. The conclusion of the study conducted on 69 Italian firms that went public between 1982 and 1992 was that Italian firms primarily seek to rebalance their leverage and reduce their cost of credit after the IPO. However, as the study is conducted on one market and the number of IPOs is relatively low it is questionable whether their conclusions can be generalized to other markets (ibid). Bancel and Mittoo (2009) survey chief financial officers (CFOs) from 12 European countries regarding the reasons behind the IPO decision. The main reasons for going public according to the interviewed CFOs are the visibility and prestige associated with listed firms, as well as the broadened shareholder base which results from the IPO. Another factor considered as a major motivation for going public is the funding for growth which is gained by the IPO (ibid). Ritter and Welch (2002) concur with this, stating that the primary reason is the desire to raise equity capital for the firm. On the other hand, in a study examining over 17,000 IPOs in 38 countries Kim and Weisbach (2008) conclude that while almost all firms raise substantial amounts of capital during the IPO, the funds are used for several purposes. This is further supported by the study conducted by Bancel and Mittoo, who found that while there are some reasons which are associated with IPOs more, overall the cash raised through the IPO is used for several purposes.

They further state that "…the decision to go public is a complex one that cannot be explained by one single theory because firms seek multiple benefits in going public." (ibid: 844)

2.2. Underpricing of IPOs

One main part of the IPO process shown in Figure 1 is the pricing of the stock. This includes the firm analyzing its current worth, the demand and other quantitative and qualitative factors, and setting the stock price to a price which reflects them. The price floated during the IPO period (the period from when the listing prospectus is shared to the public to the moment the stock exchange opens on the first day) is often significantly different to the closing day price of the first day in the stock exchange. There have been multiple studies showing that IPOs are generally underpriced which leads to significant first day returns. An IPO is generally viewed as a positive signal about the firm's future growth which in turn affects the announcement day stock price positively. "Informed traders seek to capitalize on this price run-up by purchasing stock before the event and selling it immediately afterwards." (Abraham et al., 2015: 574) This is due to information asymmetry which will be discussed later on in this literature review. A study by Ritter (1998) states that the mean initial return of IPOs in the US is about 15 per cent. Concurring with this, a study by Aggarwal and Rivoli (2001) comes to the conclusion that "…if an investor had purchased each IPO at the offering date and price and held the investment for one day, the rate of return earned would be 10,67 percentage points higher than from similarly timed investments in the NASDAQ index." (p.47) The same study also concludes that nearly all price adjustment happens during the first trading day, which in turn would indicate that the aftermarket for IPOs is quite efficient. Studies conducted on the Finnish market have had similar results. Keloharju (1993) notes that the average initial excess return on IPOs in Finland is 8,7 per cent with a sample of 80 IPOs listed between 1960 and 1992, while a later study by Hahl et al. (2014) reports a mean first-day return of 15,6 per cent for a sample of 67 IPOs listed between 1994 and 2006. While the sample sizes for studies conducted on the Finnish market are relatively small, the results align with studies conducted on larger markets and can therefore be considered as valid.

2.3. Secondary Market Performance

2.3.1. Reasons for underperformance

From the viewpoint of an investor focusing on the aftermarket, the performance of IPOs after the offering can be considered as vital to the investment decision. As mentioned in the previous chapter, the initial returns of new listings have generally been abnormally high. However, after a while the returns seem to drop below benchmark returns. Multiple studies have recorded significant underperformance amongst IPO firms in the long run (Abraham, R. et al., 2016; Ibbotson, R., 1975; Keloharju, M., 1993; Ritter, J., 1991), which would indicate that IPOs are a risky investment as opposed to already established securities on the stock market. Underperformance is defined as having smaller returns than similar established listed companies during the same time period. Loughran and Ritter (1995) find that negative returns in the long-run result from investor overestimation as they seek to pick the big winners on the market. A study by Jain and Kini (1994) similarly found that information asymmetry between the firm and investors has an effect on the underperformance in the long-run. As stated by Abraham et al. (2015), an informed trader seeks to capitalize on the overestimation and information asymmetry of others by buying shares at an IPO and selling them immediately in the aftermarket. Ritter (1991: 4) further states that underperformance is partially caused by "…a scenario of firms going public when investors are irrationally overoptimistic about the future potential of certain industries."

While most studies regard IPOs as a homogeneous group, other factors should also be taken into account. In the past decades, globalization has led to even smaller firms conducting business across borders and this can also be seen among firms with IPOs. Mauer et al. (2015: 453) find that "…globally diversified firms going public can more fully price their shares in the market (i.e. leave less money on the table) and may have better long-run performance and survival prospects than purely domestic firms." Similarly, Al-Shammari et al. (2013) find that the international market presence of IPO firms makes a positive appeal to first day investors leading to them being more willing to pay higher prices to acquire ownership in said firms. However, the study also finds that "…high levels of internationalization tend to negatively impact the assessment of first day investors of IPO prospects when blockholder ownership is low." On the other

hand, LiPuma (2012) finds that new firms with higher levels of internationalization execute their IPOs at a later stage, which would indicate that those firms are more established at the IPO from an investors point of view.

2.3.2. Evidence of IPO underperformance

The numerical evidence of underperformance is significant for investors. Most studies analyzing the underperformance of IPOs have been conducted on the US market as it is the most significant stock market in the world with its companies having a total market capitalization of over 33 trillion USD. The second largest market is China with a market cap of 6 trillion USD. (World Bank, 2018) Because of its significantly larger market size the US market offers researchers a larger sample of IPOs than for example smaller markets like Finland.

2.3.3. Evidence of underperformance from the United States

During the last century multiple studies have recorded the underperformance of IPOs on the US market. While the results are similar between the various studies, different time periods offer varying results. Ibbotson (1975) studies IPOs issued in the 1960s and finds evidence that IPOs have “generally positive performance during the first year, negative performance the next 3 years, and generally positive performance the last [fifth] year.” Ritter (1998) finds similar results regarding fourth- and fifth-year positive alphas. However, the high standard errors in Ibbotson’s studies prevent him from rejecting market efficiency. In an earlier study Ritter (1991) analyzes the long-run performance of 1526 initial public offerings by excluding the first day of trading. He finds that if an investor were to invest in IPOs at the end of the first trading day and use a 3-year buy-and-hold strategy, they would have cumulative abnormal returns of negative 26,1 percent. Similarly, Carter et al. (1998) measured a negative 19,9 percent cumulative abnormal return during 765 days post-announcement. The previously mentioned studies all compared the IPO performance to a set of companies from similar industries with similar sizes and operations to measure the alpha. Gompers and Lerner (2003) argue that while there is some underperformance when event-time buy-and-hold abnormal returns are used, they are not statistically significant.

According to the study “The underperformance disappears when we use cumulative abnormal returns. A calendar-time analysis shows that IPOs return at least as much as the market over the entire sample period.” (p. 1390) Ritter and Welch (2002) concede that while the evidence supports the theories of underperformance, caution should be used while analyzing results as “the results are sensitive not only to methodology also to the exact time period.” (p. 1823)

2.3.4. Evidence from the rest of the World

While the majority of academic studies have focused on the US market due to its significantly larger size, many have studied the underpricing and underperformance theories on other markets as well. Berk and Peterle (2015) study the underperformance of IPOs between 200 and 2009 in Central and Eastern Europe, focusing on Austria, Bulgaria, the Czech Republic, Poland, Romania and Slovenia. They find that, on average, IPOs in the region underperform European benchmarks by -14,5 to -31,3 percent, depending on the model used. (ibid) Similarly, Bessler and Thies (2007) find that German IPOs on average underperform their benchmark (the major German stock index DAX) by -26,3 to -48,9 percent, depending on the initial returns. They note that the results are fairly stable, as less than 30 percent of their sample IPOs have positive abnormal returns during their 36-month frame. Differing from other studies on other European markets, Thomadakis et al. (2012) find that the Greek market actually overperforms much further beyond the initial surge reported in other markets, continuing for nearly two years post-IPO. However, similarly to other markets, the study also finds the third year returns to be negative, concluding that “...even where there are longer-lasting positive excess returns after IPOs, eventually negative returns emerge.” (p. 139) The Chinese market has similar results as other markets, with Chen and Kenbata (2011) finding significant buy-and-hold abnormal return underperformance. However, they also find a link between underwriter prestige, with IPOs managed by more prestigious underwriters delivering higher returns.

The performance of Finnish IPOs has been studied at varying points of time. (Keloharju, 1993; Westerholm, 2006; Hahl et al., 2013) As they focus on the same market as this study, they are further used for methodology for comparison purposes.

Keloharju (1993) compared the returns on IPOs to a value-weighted index. The results he presents show that during the period the index returns -1,6 percent, IPOs have an average return on -22,4 percent at their three-year anniversary. Westerholm (2006) finds that IPOs on the Finnish market have an average buy-and-hold average return of -12,6 percent per year for five years following the IPO when compared to the Helsinki Stock Exchange index consisting of all shares. Similarly, Hahl et al. (2013) report that "The average market-adjusted return for holding IPO stocks during the first three post- issue years is −30 per cent." (p.29) However, they also find that the apparent long-run underperformance "...can be largely explained by size and momentum effects." (p. 29)

2.4. Efficient market hypothesis

To consider long-run underperformance from the standpoint of an investor, information asymmetry and efficient market hypothesis needs to be discussed. The efficient market hypothesis (EMH) is a theory suggested at the beginning of the 20th century and further developed by Eugene Fama in 1970. According to EMH an investor should not be able to beat the market on a long-term as all information related to stock prices is freely available and shared among all investors. This leads to the hypothesis that if all investors have access to all the aforementioned information, stocks always trade at their fair market value and thereby it is impossible to buy for example undervalued stocks. The three forms of EMH are weak, semi-strong and strong, based on the amount of information available to traders. As the strong form relies on a monopolistic access to information which would require insider information, it is considered the least relevant. Only the semi-strong form of EMH is required for the stock prices to reflect all available information, since insider information is illegal in most countries. The semi-strong form suggests that all public information is reflected in the prices. In relation to the IPO markets, the EMH is considered by most to hold up. In his study in 1975, Ibbotson states that "...results generally confirm that there are no departures from market efficiency." Ritter (1991) arrives at a similar conclusion that after the IPO, EMH seems to hold up. Informational asymmetry in the context of IPOs indicates that before the actual listing the information available for investors might be scarcer than in the aftermarket, which leads to the significant first day returns common in IPOs.

Abraham et al. (2016) find that the underpricing phenomena is mainly due to "...informed traders holding private information about the firm's future cash flows." (p. 574) Similarly, Hoque (2014) reaches the conclusion that information asymmetry is the main driver behind underpricing in most IPOs. By studying IPOs in the UK, he finds that while it is not the main driver in all IPOs, it nonetheless affects all to some extent.

2.5. Hypotheses and Conceptual framework

Based on previous literature and the aforementioned research questions, this paper seeks to confirm three hypotheses.

H1: On average Finnish IPOs perform worse at the third-year anniversary than benchmark indices during the same period.
H2: Finnish IPOs are underpriced on average by more than 5 per cent and therefore see significant first day returns for investors.
H3: Companies with a bigger market capitalization perform better in the years after the IPO.

The hypotheses answer in order the three research questions posed at the beginning of this paper. The first question asks if Finnish IPOs underperform in the long-run. Based on previous research both on the Finnish market (Hahl et al., 2014; Keloharju, M., 1993; Westerholm, J., 2006) and on international markets (Ibbotson, R., 1975; Ritter, J.; 1991; Bessler & Thies, 2007; Chen & Kenbata, 2011) this paper seeks to find a clear indication that IPOs have smaller returns in the long-run than their benchmark indices. The second hypothesis answers the second research question regarding underpricing. Again, the hypothesis is formed based on strong evidence from previous studies in the subject. (Bergström et al., 2006; Hoque, H., 2014; Keloharju, M., 1993) The methodology regarding the measuring of underpricing will be presented later. The third hypothesis answers the last research question which seeks to find a correlation between market capitalization and IPO performance. This hypothesis has the least unanimous conclusions in previous studies.

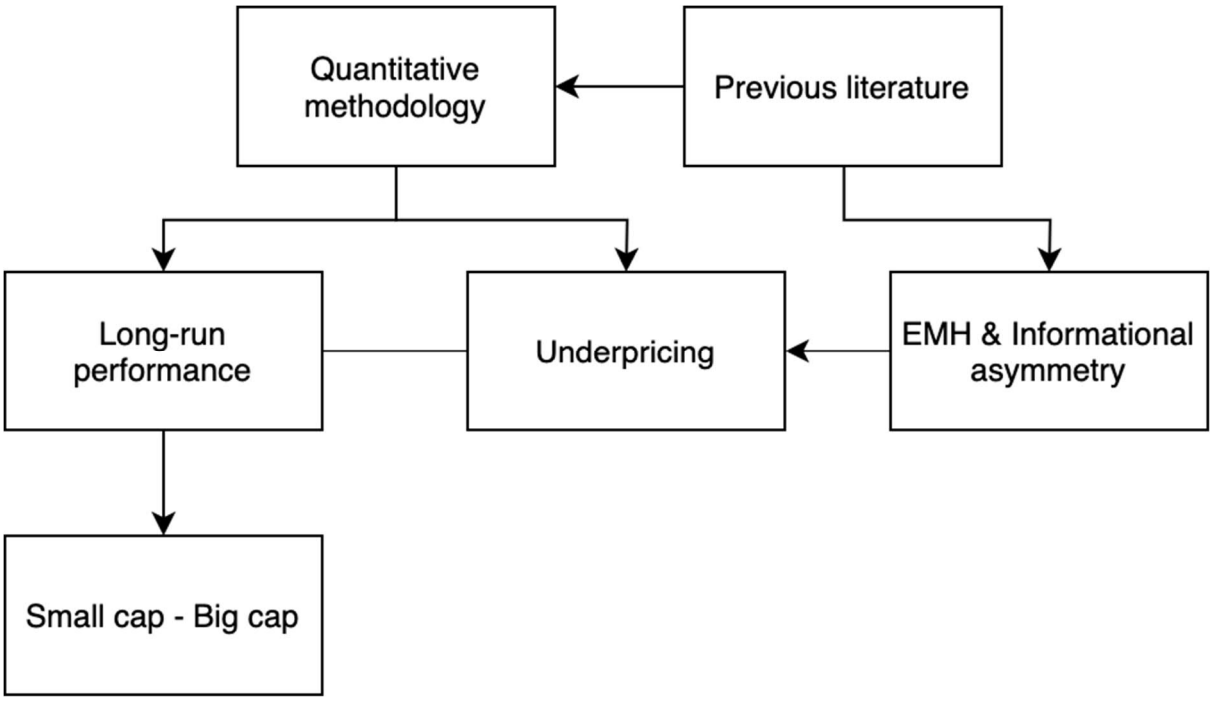

Figure 2: Conceptual framework (Lindemann, 2020)

Figure 2 presents the conceptual framework for this paper. It is based on previous literature and offers an overview of the scope and objective of this study. By utilizing the methodology and insights gained through previous literature this study seeks to find a clear indication of underpricing and long-run underperformance among Finnish IPOs during the period of 2005 to 2016. Through the quantitative analysis regarding performance it will also come clear whether there are differences in post-IPO performance of small cap and big cap companies. This study acknowledges the efficient market hypothesis and the informational asymmetry being the main drivers behind first day returns.

3. Methodology

3.1. Data

The data for this thesis consists of stock data for listed companies between 2005 and 2016 on the Helsinki stock exchange main list. The data is acquired by accessing historical stock and index rates through Thomson Reuters Datastream and Eikon, respectively. The data is extracted into Microsoft Excel, where the calculations outlined later are performed. The share subscription prices are acquired from the companies listing prospectuses. During the period of 2005-2016 35 companies listed on the main list of the Helsinki stock exchange. However, for the purposes of this study some companies in the sample years had to be excluded. Companies which delisted during the 3-year study period are excluded, as are splits, re-listings, moves from the First North list to the main list and companies for which the required stock data wasn't accessible through Datastream. After applying these restrictions, this study is left with 13 listings.

As one of the objectives of this study is to analyze the differences between smaller IPOs and larger ones, the 13 listings are divided into two groups. The dividing factor is the company's market value after the initial day of trading; companies with a market value of under 100 million and over 100 million. This divides the sample into 6 listings with a market value under and 7 listings with a market value over 100 million.

3.2. Methods

To measure the underpricing and long-run performance of the sample listings, a few different methods are used. For underpricing, the initial return period is defined as the period from the beginning of the IPO (the moment shares are first sold during the offering) to the closing of the first day of trading. The IPO price is the share subscription price which is stated in the final listing prospectus for investors. Underpricing is therefore measured as the benchmark adjusted returns of the first day of trading. The initial raw return of stock *i* is calculated as

$$r_i = \frac{p_c - p_p}{p_l}$$

where p_c is the closing price after the initial day of trading and p_p is the final subscription price. By dividing the difference of the two with the the final subscription price the percentage difference is reached. The final subscription prices are announced a few days before the first day on the stock exchange. The raw returns are used to calculate the abnormal returns which are defined as

$$ar_{it} = r_i - r_m$$

where ar_{it} is the abnormal return of investment *i* during time period *t* and r_m is the return of the benchmark index over the same period. The same formula is later used to calculate the abnormal returns over longer periods of time. However, when calculating the abnormal returns p_c is the closing price of the end of the period and p_p is the closing price of the first day of trading. To get the average abnormal return for multiple listings, AR_t is calculated as the arithmetic average of the benchmark adjusted returns for *n* number of firms. The formula is as follows:

$$AR_t = \frac{1}{n}\sum_{i=1}^{n} ar_{it}$$

Long-run performance is in this study defined as the performance from the closing price of the first day trading to the closing price at the three-year anniversary. For this purpose, three things are calculated: the three-year raw buy-and-hold returns, abnormal returns, and the wealth relatives. The three-year raw buy-and-hold returns are calculated in the same manner as the initial raw returns; subtracting the first day closing price from the price at the three-year anniversary and dividing it with the first day closing price. Similarly, the benchmark adjusted returns are also calculated by subtracting benchmark performance from the raw buy-and-hold returns.

As used by Ritter (1991) to interpret the 3-year raw returns, a wealth relative is calculated for each of the stocks. The wealth relative is calculated as follows

$$WR_i = \frac{1 + r_t}{1 + r_m}$$

where r_t is the raw return for the three years and r_m is the return of the benchmark index during the same period. A wealth relative of over 1 would indicate that the stock has outperformed the market during the period, while a wealth relative less than 1 indicates underperformance.

3.3. Benchmarks

There are varying methods used in previous literature for choosing the benchmarks to which the IPO performances are compared. The most detailed method mentioned is creating a benchmark portfolio consisting of companies that are matched to the IPOs by industry and size. Ritter (1991) created benchmark group indices with said method consisting of companies matched by size and industry. However, for the purposes of this paper a different approach was chosen.

A more general method of benchmarking listings is by comparing the performance of IPOs against a general market index. This method of benchmarking chosen companies against general or more specific stock exchange indices is used in various studies. For example, Bergström et al. (2006) in their study of the London and Paris stock exchanges utilize the main indexes. For London they utilize FTSE ALLSHARE and for Paris MIDCAC. In addition to these they also test the robustness of their study by comparing their data from London to other indexes such as FTSE250, FTSE350 and FT250VA. Similarly, Bessler and Thiess (2007) compare their German IPO samples buy-and-hold abnormal returns to the DAX index. In addition to the DAX they also employ a few value-weighted research indices, namely the DAFOX-VW and DAFOX-SC-VW.

The index used for the purposes of this study is the OMXHPI. It consists of all listed companies in the Helsinki stock exchange and is equally weighted, meaning that it doesn't take into account the market capitalization of the stocks comprising the index. By comparing the sample listings to this index, it gives a clear answer to how they have performed compared to the general market. A method using specific indices comprised of similar companies of size and industry would give only an answer to how the listings perform in their industry, while ignoring the general market.

4. *Findings*

After performing the previously outlined calculations on the stock data gathered on the 13 sample firms, the results are combined into a few differing tables. To further bring attention to the main findings, the findings are compared in relation to the set hypotheses. First, the long-run performance of both small cap and large cap companies are presented consequently from six months to the third-year maturity. Then, the first day returns are presented for comparison with the underpricing phenomena. Finally, the small cap and large cap samples are compared to find differences between their long-run performances. Table 1 shows the raw returns and index adjusted returns of listings with a market valuation of less than a 100 million euros after their first day of trading. The table contains the returns for varying time periods from the initial day (1 day) to the third-year maturity (36 months). On the right in the table are the means, trimmed means and standard deviations of the row. The trimmed mean was chosen as a method of comparison, as it removes the distortion caused by significantly high or low outliers. For example, Table 1 has as significantly high outlier on its 24- and 36-months rows which causes the mean to be quite high.

Table 1: Non-adjusted and index adjusted returns for sample companies with a Market Valuation under 100 Million euros

Raw returns	Affecto	Ovaro	Restamax	Kotipizza	Evli Pankki	Consti Yhtiöt	**Mean**	**Trimmed mean**	**StDev**
1 day	0,21 %	0,00 %	8,04 %	3,80 %	24,00 %	3,16 %	6,53 %	3,80 %	8,26 %
6 months	-35,34 %	26,89 %	-15,49 %	18,88 %	-20,07 %	16,33 %	-1,47 %	-0,09 %	23,19 %
12 months	-51,56 %	27,28 %	-26,36 %	48,94 %	-18,64 %	51,22 %	5,15 %	7,81 %	39,38 %
24 months	-18,71 %	-1,75 %	-3,42 %	171,87 %	8,12 %	-1,84 %	25,71 %	0,28 %	65,84 %
36 months	-23,49 %	-37,09 %	23,74 %	204,43 %	-2,03 %	-36,73 %	21,47 %	-9,63 %	84,53 %
OMXHPI adjusted	Affecto	Ovaro	Restamax	Kotipizza	Evli Pankki	Consti Yhtiöt	**Mean**	**Trimmed mean**	**StDev**
1 day	-1,30 %	0,13 %	7,96 %	4,26 %	23,40 %	5,78 %	6,70 %	4,53 %	8,11 %
6 months	-45,83 %	22,04 %	-18,78 %	21,88 %	-8,22 %	24,02 %	-0,82 %	4,23 %	26,01 %
12 months	-76,78 %	21,74 %	-33,50 %	49,49 %	-12,90 %	46,56 %	-0,90 %	5,47 %	45,22 %
24 months	-57,51 %	-18,14 %	-22,04 %	154,54 %	1,94 %	-15,17 %	7,27 %	-13,35 %	68,22 %
36 months	-50,65 %	-61,16 %	9,77 %	184,35 %	-4,48 %	-43,36 %	5,74 %	-22,18 %	83,75 %

Table 2 shows the raw returns and index adjusted returns for the sample companies which had a market valuation of more than a 100 million euros after the first day of trading. Formulated in the same way as Table 1, it also shows the mean and trimmed mean returns and standard deviations for the same time periods as Table 1 for ease of comparability.

Table 2: Non-adjusted and index adjusted returns for sample companies with a market valuation of over 100 million euros

Raw returns	Salcomp	SRV Yhtiöt	Asiakastieto	Pihlajalinna	Lehto Group	Tokmanni	DNA	Mean	Trimmed mean	StDev
1 day	-0,31 %	-8,91 %	3,32 %	-32,35 %	15,69 %	0,00 %	0,00 %	-3,22 %	-1,18 %	13,68 %
6 months	-24,76 %	-44,85 %	-7,48 %	63,39 %	52,71 %	37,31 %	26,73 %	14,72 %	16,90 %	37,92 %
1 year	-1,88 %	-44,44 %	-2,89 %	48,00 %	92,20 %	35,07 %	43,47 %	24,22 %	24,35 %	41,07 %
2 years	12,23 %	-58,59 %	21,26 %	53,83 %	92,20 %	3,81 %	69,31 %	27,72 %	32,08 %	46,09 %
3 years	-59,87 %	-33,33 %	64,04 %	4,35 %	-28,54 %	17,16 %	106,73 %	10,08 %	4,74 %	54,26 %
OMXHPI adjusted	**Salcomp**	**SRV Yhtiöt**	**Asiakastieto**	**Pihlajalinna**	**Lehto Group**	**Tokmanni**	**DNA**	**Mean**	**Trimmed mean**	**StDev**
1 day	-0,16 %	-10,14 %	3,97 %	-31,50 %	15,23 %	1,29 %	0,48 %	-2,98 %	-0,91 %	13,54 %
6 months	-17,15 %	-44,73 %	8,67 %	62,72 %	46,31 %	30,91 %	11,60 %	14,05 %	16,07 %	34,14 %
1 year	-10,23 %	-22,44 %	8,81 %	55,13 %	73,02 %	15,89 %	31,27 %	21,64 %	20,17 %	31,65 %
2 years	12,35 %	-8,09 %	20,56 %	39,82 %	66,37 %	-22,03 %	62,43 %	24,49 %	25,41 %	31,21 %
3 years	-9,35 %	8,82 %	57,72 %	-15,51 %	-49,74 %	-4,04 %	94,24 %	11,73 %	7,53 %	44,95 %

4.1. Long-run performance

Long-run performance findings will be presented first as they are the main subject of this thesis. While the term “long-run” is defined as being three years for the purposes of this study, it is also essential to consider the price evolution during the years between the two time points. It also adds to the value of this study to note the similarities and differences between the smaller and higher value companies, as this might give insight for investors as to how timing an investment might affect returns. The following chapters present the results of this study and conclude by reviewing the implications on the aforementioned hypotheses.

4.1.1. 6 months

Table 1 shows that the smaller companies have a mean raw return of -1,47 per cent while the trimmed mean is -0,09 per cent. The standard deviation is 23,19 per cent. Out of the six companies, three have positive raw returns and three negative ones. Notable is that the three positive and negative returns are all significantly high or low; the companies with a positive return returned at least 16,33 per cent (Consti Yhtiöt), while the companies with negative returns lost at least -15,49 per cent (Restamax). This causes the standard deviation to be nearly three times higher than with the initial returns reported in the previous chapter. When adjusted with the market index, the mean returns are slightly closer to zero at -0,82 per cent, but the trimmed mean rises to 4,23 per cent. The standard deviation also slightly increases to 26,01 per cent.

The larger companies have significantly differing returns, both raw and adjusted, after six months when comparing to the results shown in Table 1. Table 2 reports that the mean raw return after six months is 14,72 per cent, while the trimmed mean is 16,90 per cent. The standard deviation, however, is larger than amongst the smaller companies, as the standard deviation for the larger companies after six months is 37,92 per cent. When adjusted by the market index, the mean falls slightly to 14,05 per cent, while the trimmed mean is 16,07 per cent. The standard deviation for the adjusted returns after six months is 34,14 per cent. Most of the larger companies outperform the market at the six-month point, with five out of the seven companies having positive returns. There is also a similar gap between the gainers and losers, as the losers lost at least -17,15 per cent and the gainers returned at least 8,67 per cent, when adjusted by the market.

4.1.2. One year

After one year on the market the smaller companies have a mean raw return of 5,15 per cent, with the trimmed mean being 7,81 per cent. The standard deviation of the stock prices at this point is 39,38 per cent. The gain in the mean from the six-months timepoint is mainly caused by two stocks (Kotipizza and Consti Yhtiöt) gaining by over 20 per cent each, while only one company had significant losses in stock price (Affecto). The adjusted return mean is -0,90 per cent while the trimmed mean is 5,47

per cent. The standard deviation of the market adjusted returns at this point is nearly six percent higher than the non-adjusted one, 45,22 per cent. This is mainly caused by Affectos stock price losses being even more extreme than before adjustment. The mean is also severely affected by the market adjusted returns of Affecto, while the trimmed mean (which doesn't note Affecto due to it being an outlier) is affected by the adjustment differences of the other stock.

The larger companies on the other hand have a mean raw return of 24,22 per cent, while the trimmed return is nearly identical at 24,35 per cent. The standard deviation of the raw returns at this point is 41,07 per cent. The main cause for the high standard deviation at this point is Lehto Groups outstandingly high raw return of 92,20 per cent. When adjusted by the market, the mean return drops slightly to 21,64 per cent, while the trimmed mean fall to 20,17 per cent. The market adjusted returns at this point have a smaller standard deviation at 31,65 per cent. The main reason for this is the high market growth between Lehto Groups stock price at six months and one year, which adjusts the price of the stock by nearly 20 per cent.

4.1.3. Two years

After two years Table 1 shows that the smaller companies have a higher mean raw return than after the first year with a mean of 25,71 per cent. However, the mean is largely affected by the considerably high returns of Kotipizza, which returns 171,87 per cent from its first day closing to its second-year maturity. When it is excluded, the trimmed mean is 0,28 per cent. The standard deviation is 65,84 per cent, which is mainly caused by Kotipizza. The adjusted mean at of the smaller companies at two years is 7,27 per cent and the trimmed mean is -13,35 per cent. The large difference between the raw return mean and adjusted mean is explained by the large market fluctuations during the two-year periods of five of the six companies. For example, the market adjusted return for Affecto is -57,51 per cent from the first day to the second-year maturity, while the raw return is -18,71 per cent. This means that Affecto underperformed the market by nearly 30 per cent during its first two years. The standard deviation for the adjusted returns is 68,22 per cent, which is again caused mainly by the abnormally high returns of Kotipizza.

Companies with a larger market valuation seem to experience more consistent growth as the mean raw return after two years is 27,72 per cent, while the trimmed mean is 32,08 per cent. The higher trimmed mean is caused by the exclusion of SRV Yhtiöt, which experienced significant losses during their second year, mainly due to the 2008-2009 financial crisis. The standard deviation of the second-year raw returns is 46,09 per cent, which is considerably smaller than that of the smaller companies. The adjusted return mean is 24,49 per cent while the trimmed mean is 25,41 per cent. While SRV Yhtiöt saw their stock price diminish due to the financial crisis, when compared to the market their returns were only -8,09 per cent. The standard deviation of the second-year adjusted returns is 31,21 per cent which is smaller than that of their previous year. Only two of the seven companies have a negative adjusted return after the first two years.

4.1.4. Three years

The main determinative time point for this study is the third-year maturity, as three years is defined as the "long-run" for the purposes of this thesis. The returns of the sample companies from their first year to the third-year maturity will determine if the first hypothesis of this thesis stands true. Table 1 shows that the raw returns for the smaller companies have a mean of 21,47 per cent, which is again largely distorted due to Kotipizza's raw return of 204,43 per cent to their third-year maturity. The trimmed mean after three years is -9,63 per cent and the standard deviation is 84,53 per cent. The adjusted return mean after three years is 5,74 per cent, while the trimmed mean is -22,8 per cent. The significant drop from the mean raw return to the mean adjusted return is mainly due to three of the stocks experiencing a market growth of 20 per cent or more during their first three years. Four companies out of the sample six underperform the market by at least -2,03 per cent (Evli Pankki), while the remaining to outperform by at least 23,74 per cent (Restamax).

The larger companies have a mean raw return of 10,08 per cent, while the trimmed mean is 4,74 per cent. The standard deviation for the raw returns is 54,26 per cent. The seven companies have two outliers, as DNA returns 106,73 per cent to their third-

year maturity, while Affecto loses 59,87 per cent. When adjusted by the market index, the mean return is 11,73 per cent and the trimmed mean is 7,53 per cent. The standard deviation of the adjusted returns is 44,95 per cent. Only three out of the seven companies outperform the market at their third-year maturity, with the remaining three losing at least -4,04 per cent (Tokmanni).

Table 3: Wealth relatives of sample companies at three-year maturity

Market value under 100M									
	Affecto	Ovaro	Restamax	Kotipizza	Evli Pankki	Consti Yhtiöt		*Mean*	*Trimmed mean*
WR	0,6017	0,5070	1,0857	2,5352	0,9563	0,5934		1,0465	0,8092
Market value over 100M									
	Salcomp	SRV Yhtiöt	Asiakastieto	Pihlajalinna	Lehto Group	Tokmanni	DNA	*Mean*	*Trimmed mean*
WR	0,8111	1,1524	1,5429	0,8706	0,5896	0,9542	1,8377	1,1084	1,0662

To further detail the long-run performance of the sample companies, a wealth relative is calculated for each of the companies. A wealth relative of over 1 would indicate that the stock outperforms the market at three-year maturity, while a wealth relative of less than 1 means that the stock underperformed the market during the period. As can be seen in Table 3, the mean wealth relative for the smaller companies is 1,0465, while the trimmed mean is 0,8092. The mean for the larger companies is 1,1084 while the trimmed mean is 1,0662. This would indicate that during the period of 2005 to 2016, larger companies have produced a better buy-and-hold return from the first day closing to the third-year maturity than smaller companies. In simple terms, one euro invested in a hypothetical portfolio consisting of the larger companies would at the three-year maturity be worth 1,0662 euros (which is adjusted for market growth i.e. inflation), while a euro invested in the smaller companies would only be worth 0,8092 euros. It is worth noting that both the sample of smaller companies and the one consisting of

larger ones hold within them more companies which underperformed the market to their third-year maturity than companies which outperformed.

Table 4: Combined index adjusted returns for the sample

OMXHPI adjusted	1 day	6 months	12 months	24 months	36 months
Affecto	-1,30 %	-45,83 %	-76,78 %	-57,51 %	-50,65 %
Ovaro	0,13 %	22,04 %	21,74 %	-18,14 %	-61,16 %
Restamax	7,96 %	-18,78 %	-33,50 %	-22,04 %	9,77 %
Kotipizza	4,26 %	21,88 %	49,49 %	154,54 %	184,35 %
Evli Pankki	23,40 %	-8,22 %	-12,90 %	1,94 %	-4,48 %
Consti Yhtiöt	5,78 %	24,02 %	46,56 %	-15,17 %	-43,36 %
Salcomp	-0,16 %	-17,15 %	-10,23 %	12,35 %	-9,35 %
SRV Yhtiöt	-10,14 %	-44,73 %	-22,44 %	-8,09 %	8,82 %
Asiakastieto	3,97 %	8,67 %	8,81 %	20,56 %	57,72 %
Pihlajalinna	-31,50 %	62,72 %	55,13 %	39,82 %	-15,51 %
Lehto Group	15,23 %	46,31 %	73,02 %	66,37 %	-49,74 %
Tokmanni	1,29 %	30,91 %	15,89 %	-22,03 %	-4,04 %
DNA	0,48 %	11,60 %	31,27 %	62,43 %	94,24 %
MEAN	1,49 %	7,19 %	11,23 %	16,54 %	8,97 %
TRIMMED MEAN	2,50 %	6,96 %	13,62 %	10,73 %	-0,60 %
STDEV	12,34 %	31,54 %	40,12 %	52,40 %	65,84 %

After studying the results outlined in Table 4, the first hypothesis (H1) would seem to be valid when using the sample companies as a generalization for the whole market. The hypothesis, as outlined previously was:

H1: On average Finnish IPOs perform worse at the third-year anniversary than benchmark indices during the same period.

Since the trimmed mean adjusted return for the whole sample is -0,60 per cent, it can be stated that on average the sample companies underperform the market index OMXHPI at their third-year maturity. The mean 8,97 per cent cannot be considered to represent the sample as the difference between the mean and the trimmed mean is mainly caused by Kotipizza and its growth. The growth is caused mainly by a Norwegian company acquiring it which resulted in high stock price growth.

4.2. Underpricing

Table 1 shows on its first rows of data the raw returns and market index adjusted returns for the first day of trading. The percentual growth shown is calculated as the difference from the final offering price of the IPO before listing and the closing price after the first day of trading. After calculating each return, the table shows that the mean first-day raw return is 6,53 per cent while the trimmed mean is 3,80 per cent. This would indicate that the companies in question were underpriced on average by 6,53 per cent and therefore left money on the table, meaning that they could have priced their IPO higher and raise more capital that way. Even in the case of the Table 1 companies which had a market valuation of under 100 million euros, the underpricing of just 6,53 per cent would mean a large amount of capital left on the table. Table 1 shows that no company in the sample had a negative first day raw return. The standard deviation of the first day raw returns is 8,26 per cent. What is notable amongst the smaller companies is that only one company, Evli Pankki, was underpriced by more than 10 per cent.

The market adjusted returns reported in Table 1 differ from the raw returns. Slightly differing from the raw returns, the mean index adjusted return is 6,70 per cent (0,17 per cent difference) while the trimmed mean is 4,53 per cent (0,73 per cent difference). The market adjusted standard deviation is 8,11 per cent. Out of the six sample listings three had a higher market adjusted return than a raw return, indicating that the market declined during the first day of trading of the aforementioned three stock. The remaining three listings had slightly smaller adjusted returns when compared to their raw returns.

Table 2 reports the raw returns as well as the index adjusted returns of the companies in the sample with a market valuation of over 100 million euros after the first day of trading. The mean first day non-adjusted return for the larger companies is -3,22 per cent, while the trimmed mean is slightly less negative at -1,18 per cent. The standard deviation for the initial returns is 13,68 per cent. Contrary to the smaller companies, the mean initial raw return for the larger companies is actually negative. This would imply that the issues were actually slightly overpriced and that the companies where therefore able to raise capital more closely to their actual market values than the

smaller companies which left money on the table. The adjusted initial returns of the higher valued companies have a mean of -2,98 per cent (0,24 per cent difference) and a trimmed mean of -0,91 per cent (0,27 per cent difference). The standard deviation for the adjusted returns is 13,54 per cent. Five of the seven companies had a higher adjusted initial return than their initial raw return.

Based on Table 4 the second hypothesis (H2) is rejected. Hypothesis 2 was as follows:

H2: Finnish IPOs are underpriced on average by more than 5 per cent and therefore see significant first day returns for investors.

The hypothesis is rejected as the mean underpricing for the entire sample is 1,49% and the trimmed mean is 2,5%. Underpricing is measured as the difference between the final listing price and the closing price of the first day. If the adjusted returns are positive, the stock can be interpreted as being underpriced, as the market seeks to correct the price to an upward direction. The same applies inversely as well; if a stock is overpriced, the market adjusts the price by decreasing its value. In the case of the second hypothesis the results are far from conclusive and can therefore not be considered as confirming.

4.2.1. Results of the entire sample

To answer the last research question and hypothesis, a table costing of all sample companies was compiled. Table 4 presents the combined means, trimmed means and standard deviations for each timepoint of the whole sample.

As can be seen in Table 4, the mean first day return is 1,49 per cent, while the trimmed mean is 2,50 per cent. Since the presented numbers are market adjusted returns, the sample IPOs may be interpreted to have outperformed the market on average. The standard deviation for the first day returns is 12,34 per cent. Four companies out of the total sample have negative first day returns. After six months the mean increases to 7,19 per cent, while the trimmed mean is 6,96 per cent. The standard deviation also increases by nearly 20 per cent.

By the time of the first-year maturity, the mean increases to 11,23 per cent and the trimmed mean to 13,62 per cent. At the one-year mark five companies have negative returns, while on average the rest outperform the market by at least 10 per cent. At the two-year mark the mean still increases to 16,54 per cent (trimmed mean 10,73 per cent) and the standard deviation increases to 52,40 per cent. Six companies have negative returns at the second-year mark. At the three-year mark the mean decreases to 8,97 per cent, with the trimmed mean dropping to -0,60 per cent. The standard deviation amongst the final year returns reported in Table 4 is high at 65,84 per cent. The amount of companies underperforming from the first day closing steadily climbs from the first-year maturity (5 companies) to the third-year maturity (8 companies). The biggest outlier of the whole sample is Kotipizza due to its excessive growth from listing to third-year maturity.

4.2.2. Small cap versus Large cap

The third hypothesis (H3) for this thesis focused on the possible differences in long-run returns between companies with a small market value (under 100 million euros) and companies with a higher market value (over 100 million euros). Table 1 and Table 2 also provide a possibility to also compare the differences in first day returns and therefore the possible underpricing differences. The underpricing issue will be discussed in more depth in the next section. The third hypothesis was as follows:

H3: Companies with a bigger market capitalization perform better in the years after the IPO.

Based on Table 1 and Table 2, Hypothesis 3 is true as the smaller valued companies have a mean three-year buy-and-hold return of 5,74 per cent while the larger companies have a mean of 11,73 per cent. The standard deviation of the larger companies third-year returns is also significantly smaller (44,95 per cent versus 83,75 per cent). This would indicate that larger companies have more consistent positive abnormal returns. The difference between the two samples is even more wide when the trimmed means are compared; the trimmed mean difference between the smaller

companies and larger companies is 29,66 per cent. The adjusted returns are also more stable throughout the first three years, as the larger companies have positive adjusted returns means throughout the whole three-year period while the smaller companies fluctuate more.

5. *Discussion and Analysis*

Overall the findings of the study are not surprising. While the underpricing of IPOs has been a generally accepted and much researched occurrence, this study did not find conclusive evidence of it occurring during the period 2005 to 2016 in Finland. While Keloharju (1993) found that Finnish IPOs issued between 1984 and 1989 where underpriced by an average of 8,7 per cent and Hahl et al. (2014) reported the underpricing being on average 15,6 per cent (between 1994 and 2006), this study only found the underpricing phenomena to be true with the smaller companies (trimmed mean 3,80 per cent). This cannot, however, be generalized due to the small sample size. The differences between previous studies on the Finnish market and this study can partially be explained as the impact of the listings used in the samples of previous studies which wouldn't have been chosen for this study due to the restrictions set on the sample of this thesis.

While this study didn't find evidence of underpricing occurring in the sample, the long-run underperformance reported by Keloharju (1993) and Hahl et al. (2014) seems to hold. The adjusted trimmed mean abnormal return for the whole sample is -0,60 per cent. While the percentage is quite small, it still indicates long-run underperformance. Although H1 only barely stands, H3 seems to have more evidence to support it. The third hypothesis (H3) for this study was that larger companies perform better in the following years after the IPO than smaller companies. Based on Table 1 and Table 2 this study concludes that between 2005 and 2016 this hypothesis stands. The reason behind this performance difference can partially be credited to larger established companies attracting more investors due to the perceived smaller risk. Overall it would seem that when using market valuation as a deciding factor an investor should focus on companies with higher valuations for better and more consistent returns. It is also well worth noting that the company with the highest market valuation in the sample,

DNA, had an adjusted return of 106,73 per cent from first day closing to third-year maturity. Another factor affecting some of the returns in Table 1 and Table 2 is the 2008-2009 financial crisis. While the effects of the crisis on the stock market are adjusted for in the abnormal returns, it doesn't take into account the financial trouble the crisis created for the companies.

6. Conclusions

6.1. Main Findings

The main findings of this thesis are summarized based on the research questions outlined previously.

1. Do Finnish IPOs on average underperform the market index of the Helsinki Stock Exchange at their three-year maturity?

After calculating the market adjusted abnormal returns, this study concludes that if outliers are not considered, IPOs between 2005 and 2016 underperformed the OMXHPI index by 0,6 per cent. However, as the percentage is so low it is debatable how valid these results are when generalizing for all IPOs. The study might be affected by the exclusion of established companies and split listings, as these tend to perform better in the long run.

2. To what extent are issues underpriced?

The research conducted for this thesis finds that while the trimmed mean first day OMXHPI adjusted return is 2,5 per cent, it is significantly lower than in previous studies conducted on both the Finnish and other international markets. This result might be due to the selection criteria which were used to restrict the IPOs eligible for this study. However, some of the companies in the sample had high abnormal returns, which would leave room to debate whether a careful vetting process of the listing companies could give an IPO investor enough insight to pick the correct listings to invest in.

3. Do companies with a higher market valuation at the initial offering fare better during the three years following the listing?

The study finds that larger companies of the sample perform better at their three-year maturity. The difference between the means of the smaller and larger companies is roughly 6 per cent while the difference between the trimmed means is nearly 30 per cent. The standard deviation of the larger companies' returns is also nearly 40 per cent smaller which would indicate that generally larger IPOs are a safer investment in the long-run.

6.2. Implications for International Business

The results of this thesis might have implications for investors investing on international markets. While this study focuses on the Finnish market, prior research outlined in the literature review has found similar results in other markets as well. Finding clear evidence of both underpricing and long-run underperformance will help an investor make more informed decisions when considering an effect on both the Finnish and international markets. From a company standpoint the main implication is the underpricing theory. Understanding the theory and historical findings may help companies price their IPOs more closely to their market value which results in raising more capital.

6.3. Limitations

There are a few limitations which affected the results and the generalization of them. The first one is the sample size: 13 listings is a severely limited sample size when compared to other studies done on the topic before. The sample sizes of previous studies range from a hundred to thousands. Therefore, it may be debatable how comparable the results of this study are in the general scope of IPO research. However, the Finnish market is considerably smaller by standard than the other markets discussed and therefore the results of the studies represent the market to the best of their ability. The second limitation of this study is the methodology. While the methodology chosen for this research is utilized in previous studies (Ritter, 1991; Keloharju, 1993) the lack of statistical analysis (limited by the sample size) prevents this study from reaching any significant conclusions.

6.4. Suggestions for Further Research

Based on the findings and limitations of this study, there are a number of suggestions for future research.

The main suggestion based on this thesis would be to conduct this study again but with the whole sample of companies listed between 2005 and 2016. This would be closer to the research done by Keloharju (1993), Westerhold (2006) and Hahl et al. (2014) and would therefore be more comparable in general. It would also allow for statistical measures to be used to measure significances and joint dependencies between market returns and IPO returns. A more thorough study would also be able to confirm or refute the results and hypotheses of this thesis.

Another suggestion would be to further examine the differences between small and large IPOs as the differences found by this thesis seem to point at larger companies succeeding better in the years after the IPO. However, a study like that would most likely have to be conducted on another European market (e.g. Germany or Sweden) due to the significantly higher number of IPOs and therefore larger companies listing. It would also be possible to compare the returns within industries, something which again is relatively complicated on the Finnish market due to the sample size.

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